PHYSIOGRAPHY AND GEOGRAPHY—THEIR RELATIONS, DIFFERENCES AND ESSENTIAL FIELDS.*

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Theoretically, it is conceded that geography shall be taught in the grades and physiography in the high schools, but practically both are taught more or less all the way through. Hence, many do not see the boundary line which separates these two sciences. I speak of the subjects in the public schools only, because at present they are best known as parts of public school curricula, not because I believe they are or should be confined to these stages. Neither do I object to the above mentioned lack of differentiation in the elementary teaching.

Pupils came to us in the colleges and universities totally blind, as have been their teachers before them, to any real distinction between geography and physiography. The idea seems to prevail that the former includes the latter. Undoubtedly the use of the name physical geography for the latter cultivates the notion. Truly they are related but not quite in that way. Physiography, if not able to go alone, is more properly considered a corporate part of geology. What then is the relation existing between these two sciences? Can one be studied without the other? Which one should receive attention first? Are they so related that they may be concurrently studied?

These questions will be discussed in inverse order. In elementary work the pupil's interest centers in, and radiates from the human or life element. So in his geography he finds man harvesting grain with a cradle in Vermont, with a two- or three-horse reaper in Ohio and a steam header in Southern California, and he asks why. The answer comes in noting the topography, soil, and climate, and the condition of, and uses for, the straw. He incidentally learns something of the physiography of the places studied in order to explain the relations and responses which he has found. He reads of the arid climate of the Great Plains and then discovers the influence of the Rockies in producing the aridity, and ultimately comes to appreciate several points about mountains. He finds the railroads coming into Indianapolis and Columbus from all directions while they enter Cincinnati, Albany and Helena from only three or four. The teacher calls attention to the topography and he learns facts about plains and prairies, about mountains, passes and valleys. But through it all he is studying geography, not physiography. He is using simple, physiographic facts to explain and answer geographic questions. It is time enough to introduce the physiographic when the geographic requires it.

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Again, when in physiography he studies the life history of a plateau and traces the feature from its geotectonic uplift through the steps of its dissection and aging, watching its valleys first deepen, then widen, and its level topped divides melt away to crests with long slopes, while the valley floors widen to occupy half or two-thirds of the region, he may incidentally note that the population and highways occupy the tops of the hills—the plateau surface—in youth, that the culture descends the slopes as the valleys mature, and that in maturity transportation routes, cities, and most of the people are in the valleys while the hill tops are left to pasture or forest. To sum up, a few facts in either science are gathered in the pursuit of the other, but the two subjects do not develop concurrently.

To the second question, "which should receive the attention first," the answer depends upon the age and maturity of the pupil. If a child, geography first everytime. If a mature student, he may well prepare for geography by a strong course in physiography; but the phenomena, reasoning, and philosophy of the latter are far beyond the experience and power of the child, to say nothing of the locus of his interest.

The remaining question, "can one be studied without the other," has been at least partly answered. In physiography, one does not need to learn many facts of geography, and he certainly ought not to follow up the relations to man and his responses to the influence of the conditions, far enough to detract from the systematic development of his subject. In geography, he uses the facts of this related science as he does those of history, sociology and anthropology, but he does not attempt to grasp its philosophy.

Turning to the second division of the subject, "their differences" it is apparent from what has preceded that they often deal with the same features and phenomena. They seem in many topics to use the same basal materials but in a different way. For illustration—in physiography the valley is a topic. It is described, its origin and the evolution of its parts are discussed. Its development is traced and a definite age is ascribed to it. Its end is predicted. Its genetic relation to the surrounding region is discussed. In geography, the same valley is noted as a control of the movements of men and goods, as a home for a state, clan or a certain group of men, or as the seat of adapted industries. Its commercial or economic relations to the surrounding region are noted.

Another illustration is furnished by the river. In physiography, its course through the valley and the regional topography is considered; the work accomplished in its normal development; its method of procedure in carving its valley, enlarging its

curves, extending its course, and broadening its territory; its relation to other streams, to lakes or the ocean. But in geography the transportation facilities offered, the power made available, the possibilities for irrigation, city water supply, and park and scenic uses, these are the subtopics. Its location, whither it leads, what cities on its banks and why; the inter-relation and the inter-action of man and the river, there are its interests. In a similar way the plain and mountain, the sea and shoreline receive different treatment in the course of the development of the two subjects.

These sciences, however, are not different from others in this respect; for chemistry, geology and physics all deal with matter and natural forces, and history, economics, and sociology all study man's institutions.

The difference between geography and physiography is one of point of view. Physiography concerns itself with the description, and the classification of physiographic forms on the basis of the cycle, process or the family; geography with the relations of these same forms to man. In the former the principle is systematization; in the latter, relation. For example, take a plain. In physiography its characteristics are listed, its origin is determined, its age in its normal cycle of development, the processes in operation upon it, and its relation to the surrounding topographic features. A comparison with other plains is made and the types are discussed until the specific feature, say the coastal plain of Alabama and Mississippi has been referred to its type and class, to its variety and age. It may be called a belted coastal plain, submaturely dissected in its inland portion and less dissected and slightly drowned along the coast. Systematization is the objective.

In geography the same plain comes up as the home of the cotton growing industry. The especial adaptations to this business and to others are discussed; the features of the plain to which transportation responds, the location of its cities, roads and ports, the distribution of its crops and minerals, population and industries are shown to be related to its levelness, its belted structure, its stage of dissection, and the position of its harbors and other commercial outlets. In all these points it may be compared with other plains. In these *relations* centers the interest, and through their recognition comes the gain to the student.

This essential difference appears early in the study but becomes clearer as each subject emerges from the high school curriculum. Beginnings are made, and some facts learned, but the complete organization of the truth pertaining to the science can not be accomplished in elementary schools nor by immature

pupils. Just as nature study introduces the plant and animal kingdoms to the child and high school zoology and botany continue to familiarize him with them, so as to pave the way for college and university research into the fundamental principles of the sciences of zoology and botany; so nature study, and subsequently, geography and physiography supply basal conceptions for the extended quest for knowledge in the separate sciences of our subject.

We are now prepared for a brief treatment of the third division of the subject, "their essential fields." We have gone far enough already to begin to see the scope of each. Physiography describes, classifies, and discusses the origin of the features of the earth. It compares similar and dissimilar, related and unrelated forms always seeking to reduce the multitudinous variety to a system, to group likes and correlate related specimens. It concerns itself with the physiographic processes and forces of the earth, air, and sea and endeavors to explain all the workings of all, and to understand the nature of all physiographic features. Such a field and purpose constitute physiography a science. They proclaim it to have problems, easy and hard, short and long, solved and unsolved, and I may say, solvable and unsolvable. All this means, further, that the elementary introduction, which the high school boy receives, to the general subject does not acquaint him with the science. It only puts him in touch with some of its facts and theories, and enables him to see and work out for himself, other truths; or to pursue the subject more at length in the University.

And geography possesses a field more biotic, anthropic, and industrial but centering in the relation of the anthropic phenomena to the physiographic. Its seeks to discover all responses of mankind to his physical environment; to show how human industries are related to the distribution of natural resources and to the facilities for moving and marketing them; to show why man lives where he does and as he does so far as these depend upon the physiographic, climatic, and geographic conditions or upon the distributions of natural features or phenomena; to trace his institutions, the elements of his character and the nature of his aspirations as far as they are related to the physical surroundings; and, having accummulated all these data, to reduce them to systems, and to organize them into laws and principles. Geographers have been working in this field for two milleniums and a vast body of material has been collected. Much of the material has been classified; laws have been found, principles discovered, and, today, one of the oldest of sciences is again finding itself.

Here, too, only beginnings are mastered in the elementary schools. In subject matter, both quality and quantity, and in

method of treatment and philosophy, geography in its higher phases is a university subject. Universities in France, Germany, Austria and to some extent in other countries, have prepared for the study of geography in their courses. Two or three American universities give some systematic instruction in advanced geography. Many more should and, I trust, will, if for no other reason than the utilitarian, the preparation of teachers for elementary and secondary schools and the equipment of men for business, diplomatic, and government positions where a knowledge of the principles of geography is of inestimable value.

To sum up, then, physiography and geography are two distinct sciences. They each contribute to the full appreciation of the other; especially does the former minister to the latter. They often deal with the same basal materials, but not in the same way nor to the same end. Physiography describes and classifies physiographic features and discusses the processes and agencies by which they are made. Geography shows the relations existing between man and his physical environment and classifies the influences and responses. Both physiography and geography are large, complex, and, as yet, not fully developed sciences, and therefore present to the investigator many unsolved and difficult problems.